

## CLAIMS

What is claimed is:

1. A method for setting a gain in an automatic gain controller of a receiver comprising:
  - 5        detecting a peak signal voltage from an estimated amplitude signal or a recovered carrier signal from a received signal; and
  - setting the gain dependent on a difference between the detected peak signal voltage and a peak reference voltage.
2. The method as claimed in Claim 1 further comprising:
  - 10      converting the estimated amplitude signal, the recovered carrier signal and a reference signal to a same common mode, the peak signal voltage being detected from the converted estimated amplitude signal and the converted recovered carrier signal.
3. The method as claimed in Claim 2 further comprising:
  - 15      detecting the peak reference voltage from the converted reference signal.
4. The method as claimed in Claim 1 wherein the peak signal is detected from the estimated amplitude signal until the amplitude of the carrier signal decreases below the amplitude of the estimated amplitude signal.
5. The method as claimed in Claim 4 wherein the peak signal is detected from the carrier signal after the carrier is recovered.
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6. The method as claimed in Claim 1 wherein the carrier signal is an I signal.

7. The method as claimed in Claim 1 wherein the carrier signal is a Q signal.
8. The method as claimed in Claim 1 wherein the carrier signal is an I signal and a Q signal.
9. An apparatus for setting gain in an automatic gain controller of a receiver comprising:
  - 5 a first peak detector for detecting a signal peak voltage from an estimated amplitude signal or from a carrier signal recovered from a received signal; and
  - an integrator which sets the gain dependent on a difference between the peak signal voltage and a peak reference voltage.
- 10 10. The apparatus as claimed in Claim 9 further comprising:
  - a converter for converting the estimated amplitude signal, the recovered carrier signal and a reference signal to a same common mode, the first peak detector detecting the signal peak voltage from the converted estimated amplitude signal and the converted recovered carrier signal.
- 15 11. The apparatus as claimed in Claim 9 further comprising:
  - a second peak detector for detecting a peak reference voltage from the converted reference signal.
12. The apparatus as claimed in Claim 9 wherein the peak signal voltage is detected from the estimated amplitude signal until the amplitude of the carrier signal decreases below the amplitude of the estimated amplitude signal.
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13. The apparatus as claimed in Claim 12 wherein the peak signal is detected from the I signal after the carrier is recovered.

14. The apparatus as claimed in Claim 9 wherein the carrier signal is a I signal.
  15. The apparatus as claimed in Claim 9 wherein the carrier signal is a Q signal.
  16. The apparatus as claimed in Claim 9 wherein the carrier signal is an I signal and a Q signal.
- 5 17. The apparatus as claimed in Claim 9 wherein the differential comparator includes a plurality of matched differential amplifiers.
18. The apparatus as claimed in Claim 9 wherein the differential amplifiers have the same common mode rejection ratio.
  19. An apparatus for setting a gain in an automatic gain controller of a receiver comprising:
    - means for detecting a peak signal voltage from an estimated amplitude signal or a recovered carrier from a received signal; and
    - means for setting the gain dependent on a difference between the detected peak signal voltage and a peak reference voltage.
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- 15 20. The apparatus as claimed in Claim 19 further comprising:
  - means for converting the estimated amplitude signal, the recovered carrier signal and a reference signal to a same common mode; and
  - means for detecting the peak signal voltage from the converted estimated amplitude signal and the converted carrier signal.
- 20 21. The apparatus as claimed in Claim 20 further comprising:
  - means for detecting a peak reference voltage from the converted reference signal.

22. The apparatus as claimed in Claim 19 wherein the peak signal is detected from the estimated amplitude signal until the amplitude of the carrier signal decreases below the amplitude of the estimated amplitude signal.
23. The apparatus as claimed in Claim 22 wherein the peak signal is detected from the carrier signal after the carrier is recovered.  
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24. The apparatus as claimed in Claim 19 wherein the carrier signal is an I signal.
25. The apparatus as claimed in Claim 19 wherein the carrier signal is a Q signal.
26. The apparatus as claimed in Claim 19 wherein the carrier signal is an I signal and a Q signal.  
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27. A method for setting the gain of a receiver in an automatic gain controller in the receiver comprising:  
detecting a peak signal voltage from an estimated amplitude signal or a recovered carrier signal from a received signal, the peak signal detected from the estimated amplitude signal until the amplitude of the carrier signal decreases below the amplitude of the estimated amplitude signal and the peak signal detected from the recovered carrier signal after the carrier is recovered; and  
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setting the gain dependent on a difference between the detected peak signal voltage and a peak reference voltage.
28. An apparatus for setting gain of a receiver in an automatic gain controller in the receiver comprising:  
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a first peak detector for detecting a signal peak voltage from an estimated amplitude signal or from a carrier signal recovered from a received signal, the peak signal detected from the estimated amplitude signal until the amplitude of

the carrier signal decreases below the amplitude of the estimated amplitude signal and the peak signal detected from the recovered carrier signal after the carrier is recovered; and

5           an integrator which sets the gain dependent on a difference between the peak signal voltage and a peak reference voltage.